

# AIR QUALITY AND PERMITTING OVERVIEW

LINDSEY JONES, MS

SENIOR TOXICOLOGIST, TOXICOLOGY DIVISION

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



# AIR PERMITTING 101



- TCEQ provides an online training and presentation materials that give more detailed information on the permitting process
- <https://www.tceq.texas.gov/permitting/air/training/apd-training.html>

# TEXAS CLEAN AIR ACT

## TEXAS HEALTH AND SAFETY CODE, TITLE 5, CHAPTER 382



- 382.003 – defines air pollution as:
  - The presence in the atmosphere of one or more air contaminants or combination of air contaminants in such concentration and duration that:
    - Are or may tend to be injurious to or adversely affect human health or welfare, animal life, vegetation, or property; or
    - Interfere with the normal use and enjoyment of animal life, vegetation or property.
- 382.0518 and 382.085 specifically mandate the TCEQ to conduct air permit reviews of all new and modified facilities to ensure that the operation of a proposed facility will not cause or contribute to a condition of air pollution.

# AIR QUALITY PERMITTING



- TCEQ authorizes two classes of pollutants
  - Criteria air pollutants (NO<sub>2</sub>, PM, SO<sub>2</sub>, Pb, CO, ozone (regulated as NO<sub>2</sub> and VOC))
    - National ambient air quality standards (NAAQS) set by the EPA
  - Non-criteria air pollutants (VOCs, metals, PAHs, etc.)
    - Health protective screening levels set by the TCEQ

# DERIVATION OF TOXICITY FACTORS



- Guidelines were originally drafted in 2005 and finalized in 2006
  - Externally peer reviewed (organized by U. Cinn. Risk Science Center)
  - 2 rounds of public comment
- Updated version finalized in 2012
  - Subjected to peer review and public comment
- Revised September 2015
- State-of-the-science
- <https://www.tceq.texas.gov/toxicology/esl/guidelines/about.html>

# AMCVS AND ESLS



- Air Monitoring Comparison Value (AMCV) = Health-based, odor-based, or vegetation-based value used for air monitoring data evaluation
  - Short-Term (1-hr), 24-hr, and/or Long-Term (lifetime)
- Effects Screening Level (ESL)
  - Health-based AMCV \* 0.3 for air permitting (non-carcinogens)
  - 10<sup>-5</sup> risk (carcinogens)
  - Short-Term and Long-Term
- Values for over 7,000 chemicals
- <https://www.tceq.texas.gov/toxicology/database/tox>

# AIR PERMIT APPLICATION REVIEWS



- Texas Clean Air Act
  - **All emissions from all sources** must be authorized
  - Pre-Construction permit

- Types of Permit Applications

Educational laboratories, laundromats, office equipment, fireplaces, BBQ pits



De  
Minimis

Pilot plants, bulk sand handling, livestock auctions, ceramic kilns



PBRs

Concrete batch plants, boilers, municipal solid waste landfills



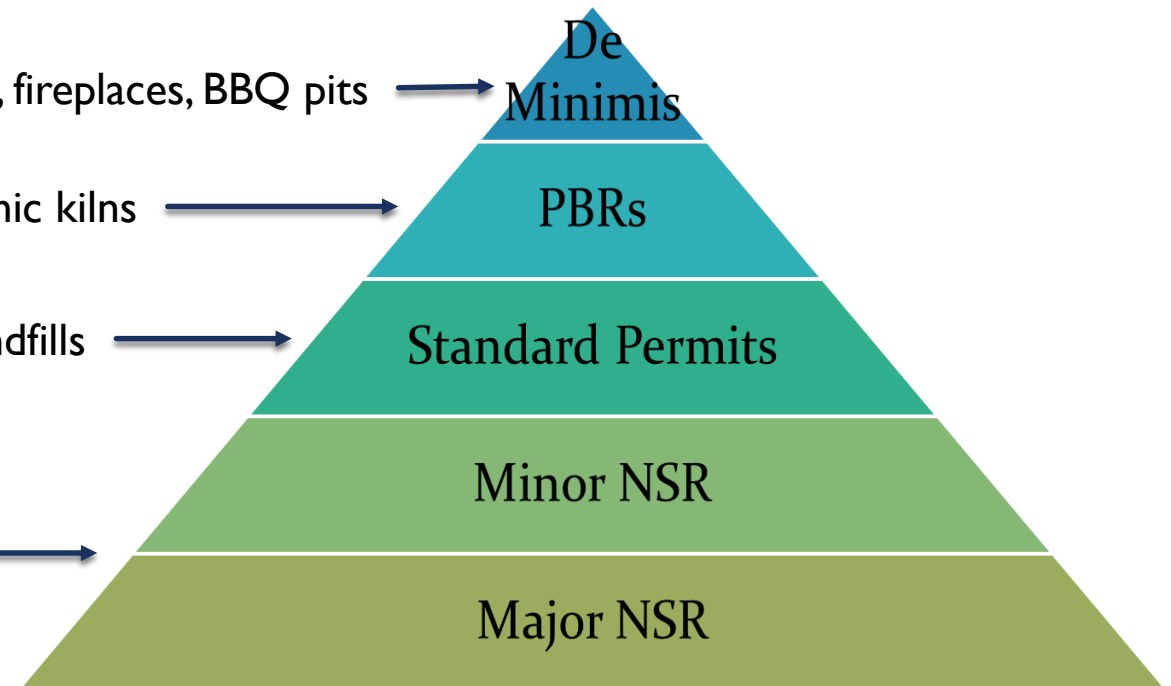
Standard Permits

New facility or modification of an existing facility



Minor NSR

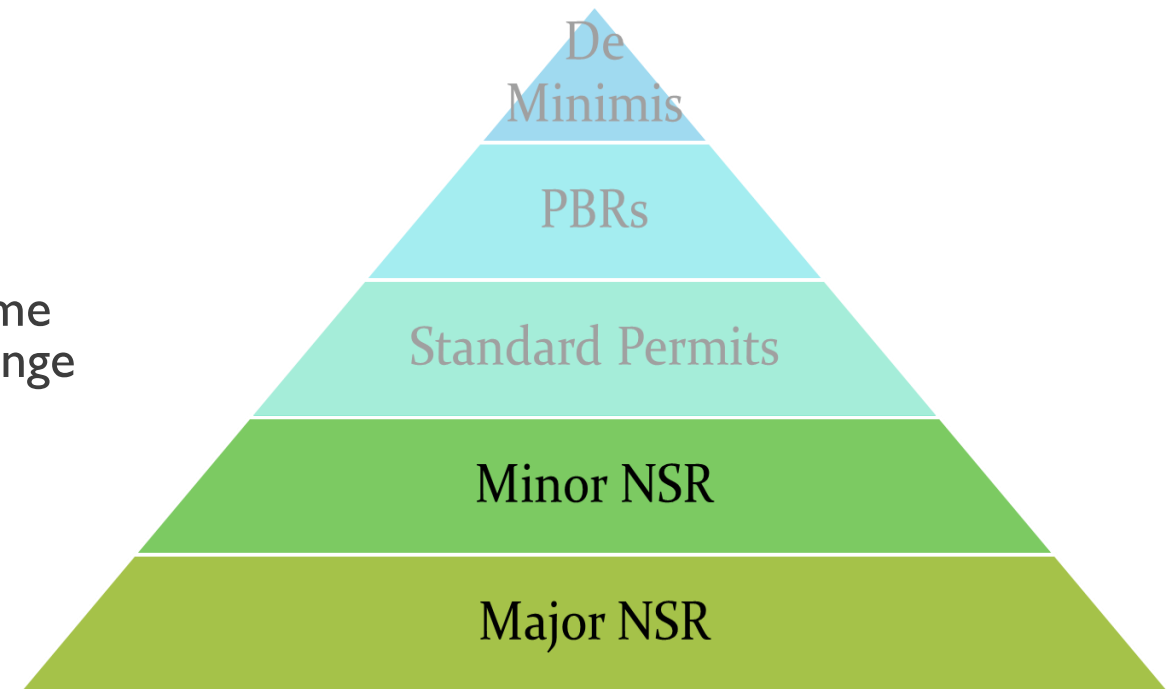
Major NSR



# AIR AUTHORIZATION TYPES



- New Source Review Case-by-Case Permits (30 TAC 116)
  - Non-Attainment Permits
  - Prevention of Significant Deterioration (PSD)
  - Case-by-Case review
  - Facility specific
  - Public notice is required for new facilities and some modifications depending on the nature of the change
- Title V Federal Operating Permits (30 TAC 122)
  - Applies to major sources
  - Codifies all requirements at site







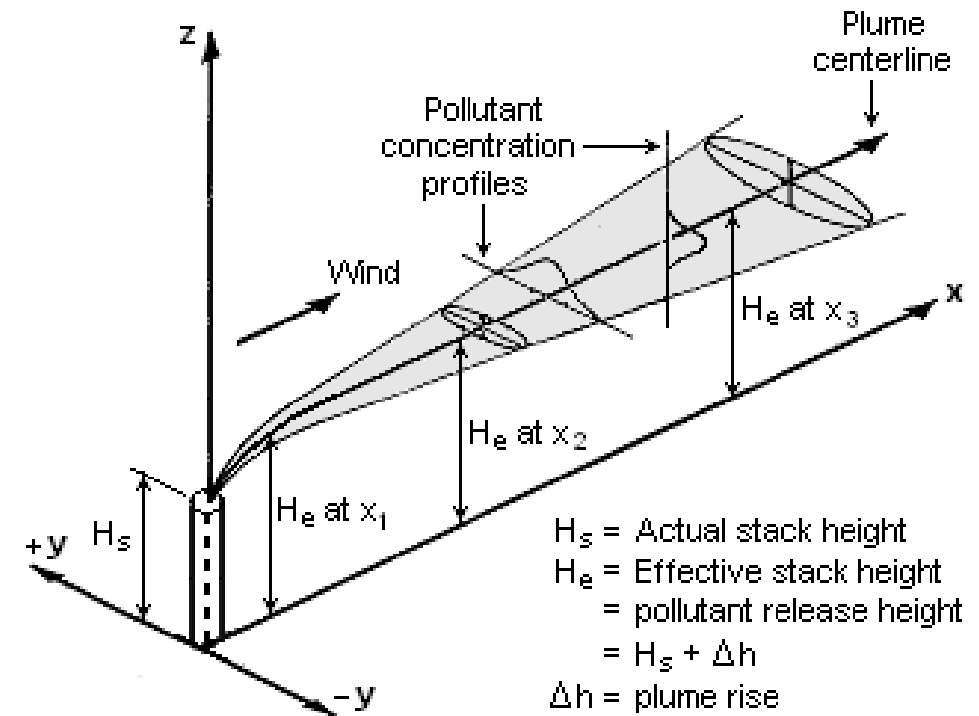
## NEW SOURCE REVIEW (NSR) PERMITTING

- Company submits application that includes sources, source location, estimated emission short-term and long-term rates, emission controls, off-property impacts analysis, etc.
- Agency review (control technology, emission rates, dispersion modeling, federal applicability and regulatory requirements, etc.)
- May also undergo review by other TCEQ divisions (Environmental Law, Regional Office, and Toxicology)
- Some projects are subject to public notice and opportunity for contested case hearing
- Typically have a 10-year renewal cycle
- [https://www.tceq.texas.gov/permitting/air/nav/air\\_guidenewsources.html](https://www.tceq.texas.gov/permitting/air/nav/air_guidenewsources.html)

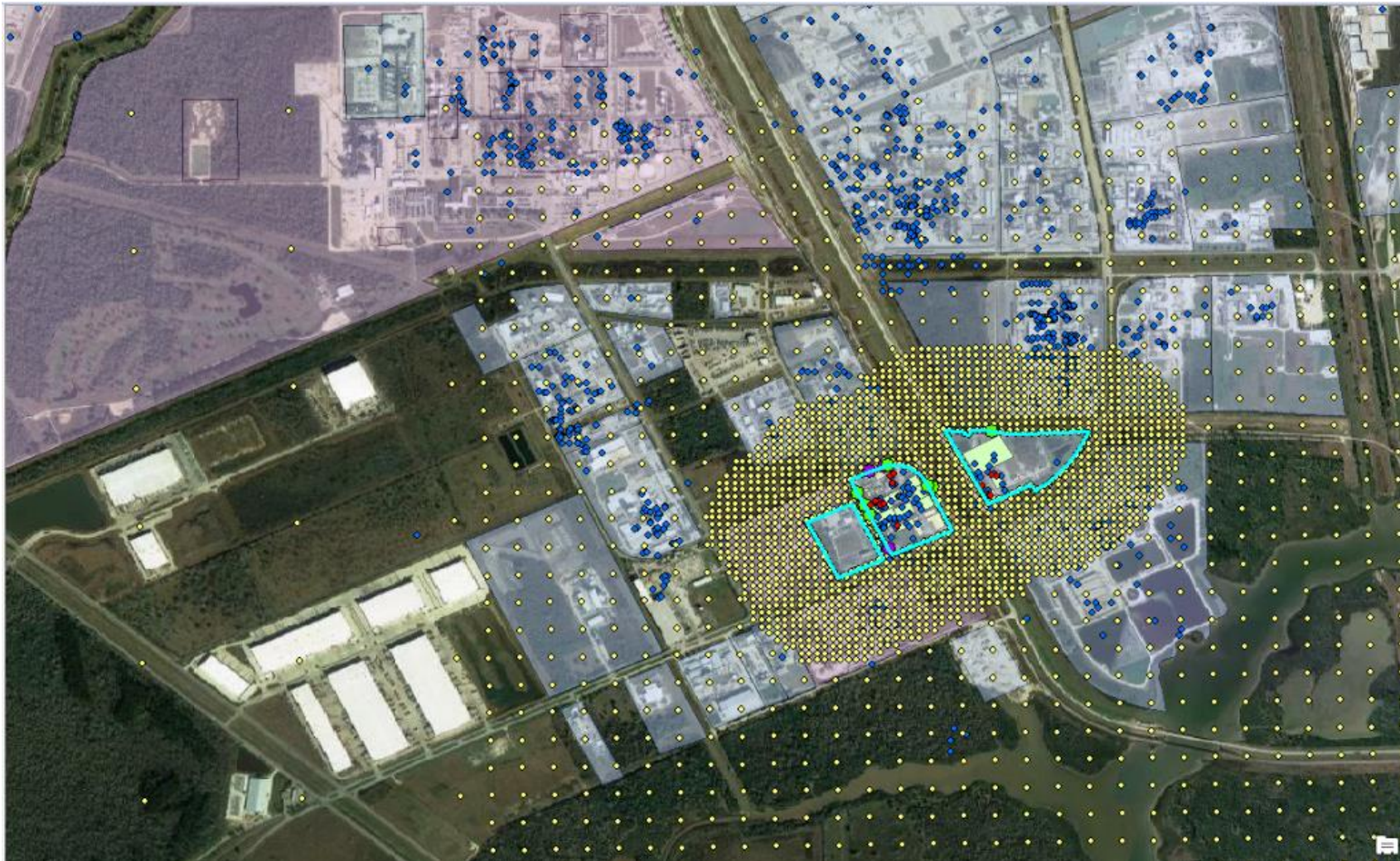
# AIR DISPERSION MODELING



- Model all sources, even pipes
- Considers
  - Temperature of sources
  - Exit velocity of emissions
  - Height/diameter of sources
  - Wind speed
  - Wind direction
  - Atmospheric temperature
  - Terrain
  - Distance
  - Downwash
- Assumptions are conservative



# MODELING RESULTS



# TOXICOLOGY REVIEW



- Potential for exposure
  - Industrial vs. non-industrial
- Potential for short-term and long-term adverse health effects
- Potential to cause nuisance odors
- Potential to cause adverse effects to vegetation

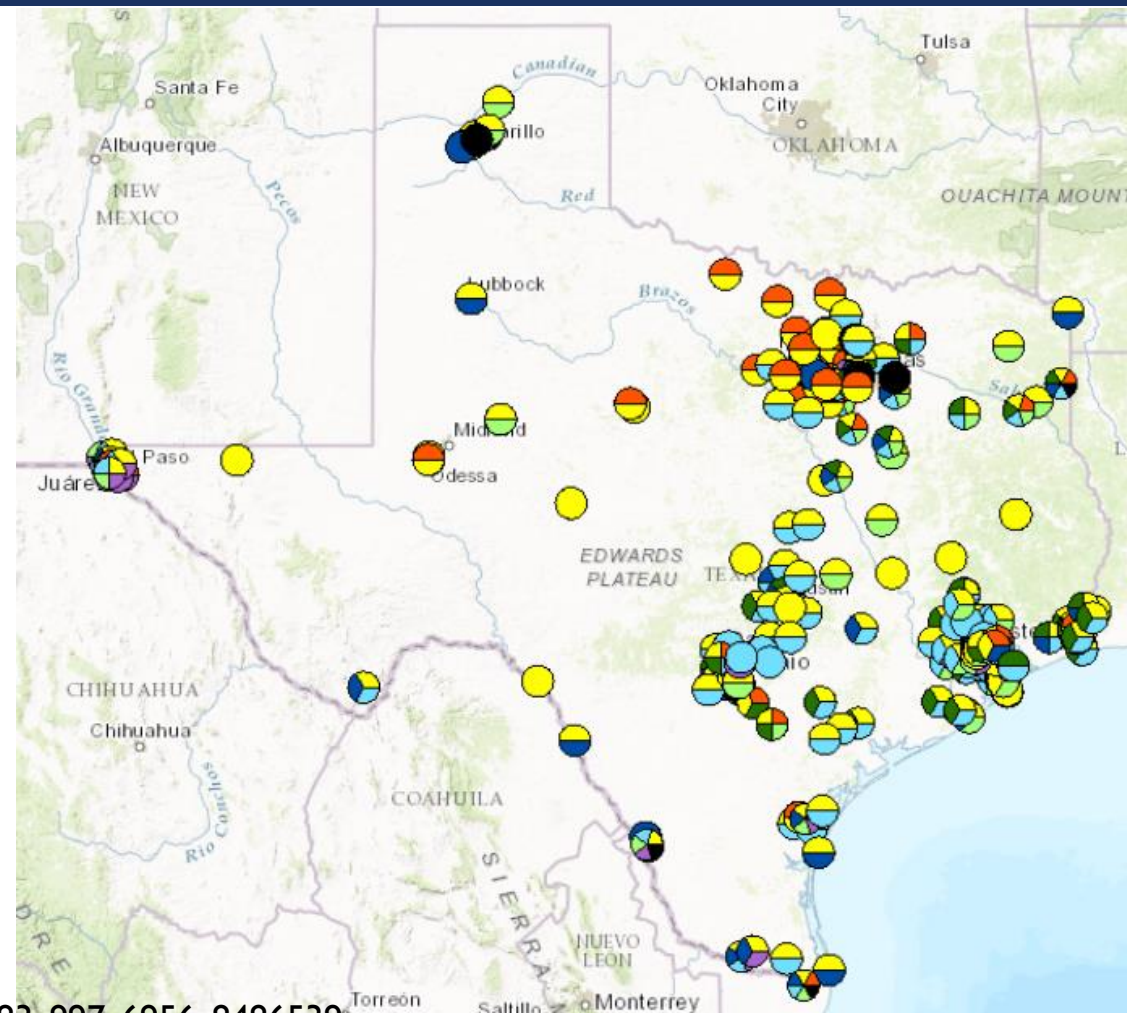
If a company follows their permit, we expect  
no short-term or long-term health effects



# ARE PERMIT REQUIREMENTS DOING THEIR JOB?



- Texas has a robust monitoring network
- Data are collected and displayed in 1-hour and 24-hour increments
- TCEQ evaluates over 11 million data points per year



# CRITERIA POLLUTANT MONITORING



Particulate Matter  
Monitor



Gaseous Criteria Pollutant Monitors



# FIXED-SITE CANISTER SAMPLER





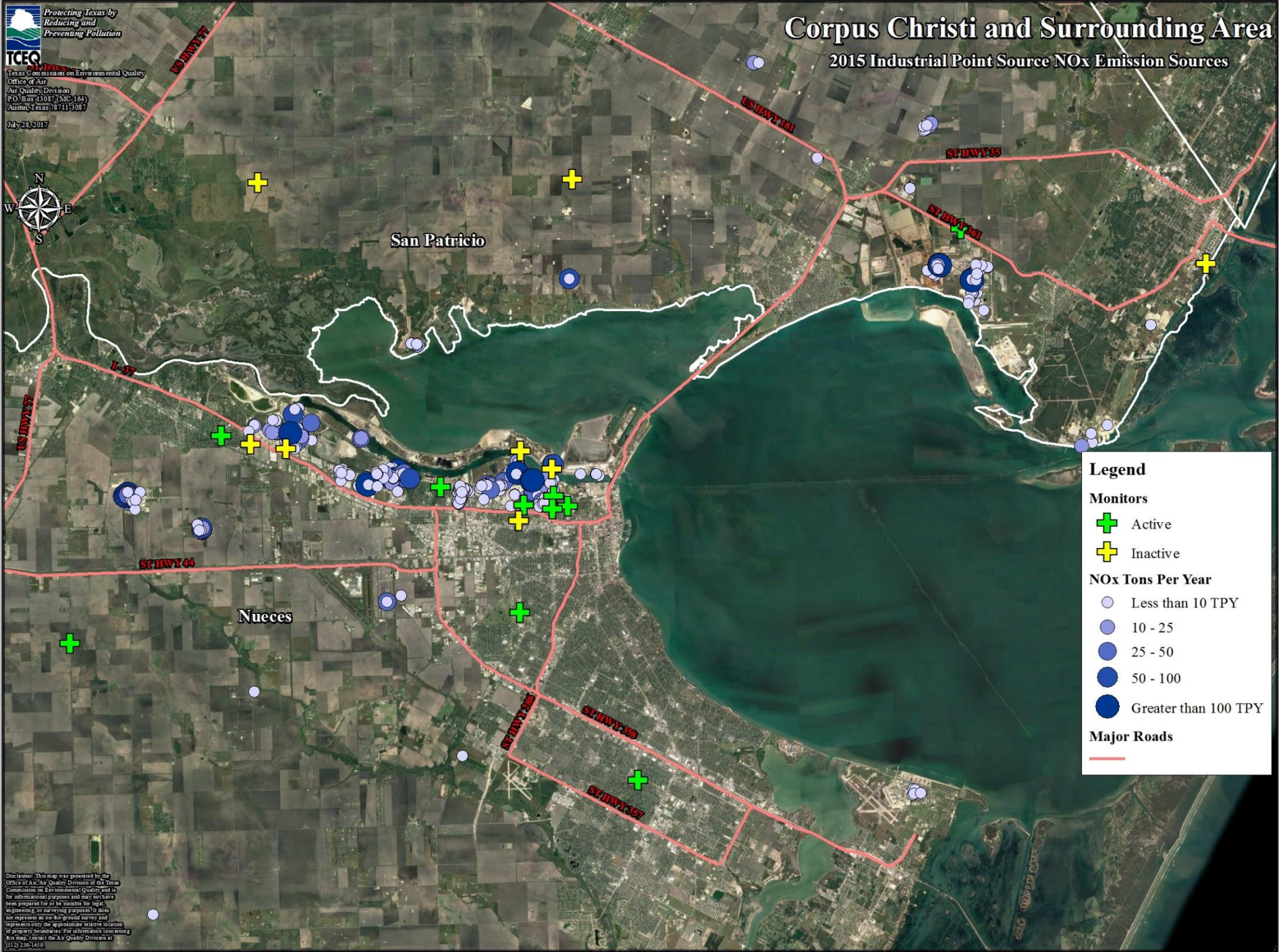
# FIXED-SITE AUTOGC





# Corpus Christi and Surrounding Area

## 2015 Industrial Point Source NOx Emission Sources

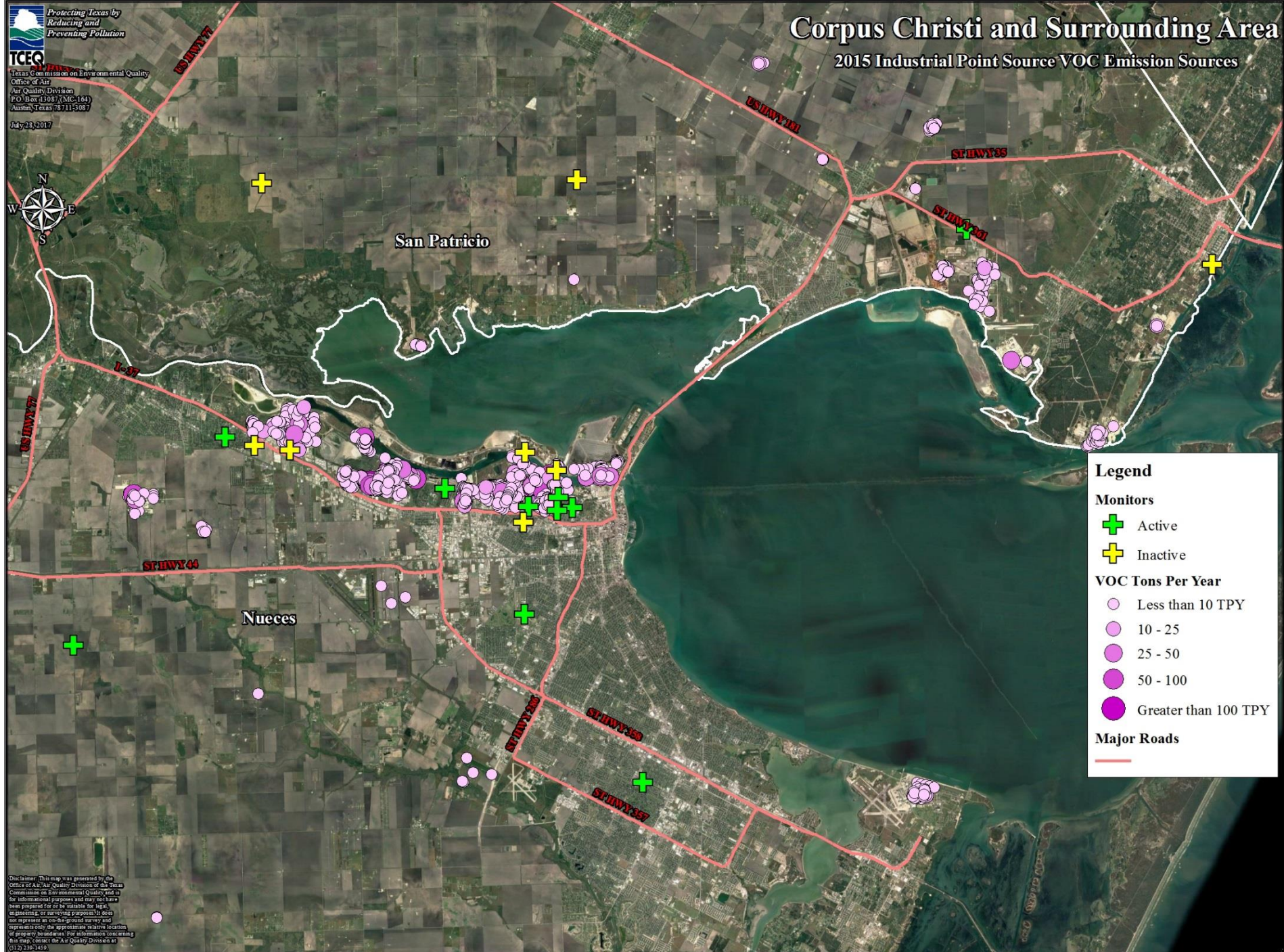


Disclaimer: This map was generated by the Office of Air Quality Division of the Texas Commission on Environmental Quality and is for informational purposes only. It does not constitute a legal document. The map is not intended to be used for legal, engineering, or surveying purposes. It does not represent an official position of the Texas Commission on Environmental Quality and represents only the approximate relative location of property boundaries. For information concerning this map, contact the Air Quality Division at (512) 239-1459.



# Corpus Christi and Surrounding Area

## 2015 Industrial Point Source VOC Emission Sources





# HOW ARE MONITORING LOCATIONS CHOSEN?

- Placement of air quality monitors are evaluated using:
  - trends in population,
  - reported emissions inventory data, and
  - existing air monitoring data for a given area.
- Locations are selected that meet federal air monitoring requirements (40 Code of Federal Regulations Part 58)



# STATIONARY AMBIENT AIR QUALITY MONITORING



- Monitoring for compliance with federal requirements
  - 40 Code of Federal Regulations Part 58 details network requirements for criteria pollutants and precursors
  - Generally based on population
- State-initiated monitoring
  - Priority given to areas with potential air quality issues (ex - increased oil and gas activity in the Barnett Shale and Eagle Ford Shale areas)
- Monitoring by other entities
  - Cities, universities
  - Regulated entities

# ANNUAL MONITORING NETWORK PLAN



- Annual evaluation created by Monitoring Division to detail how Texas meets federal monitoring requirements
  - Evaluates the number of monitors, their location, and adequacy of coverage
- 30-day public comment period is provided in May of each year
- Submitted to EPA on July 1 of each year
- [https://www.tceq.texas.gov/airquality/monops/past\\_network\\_reviews](https://www.tceq.texas.gov/airquality/monops/past_network_reviews)

# AIR MONITORING DATA

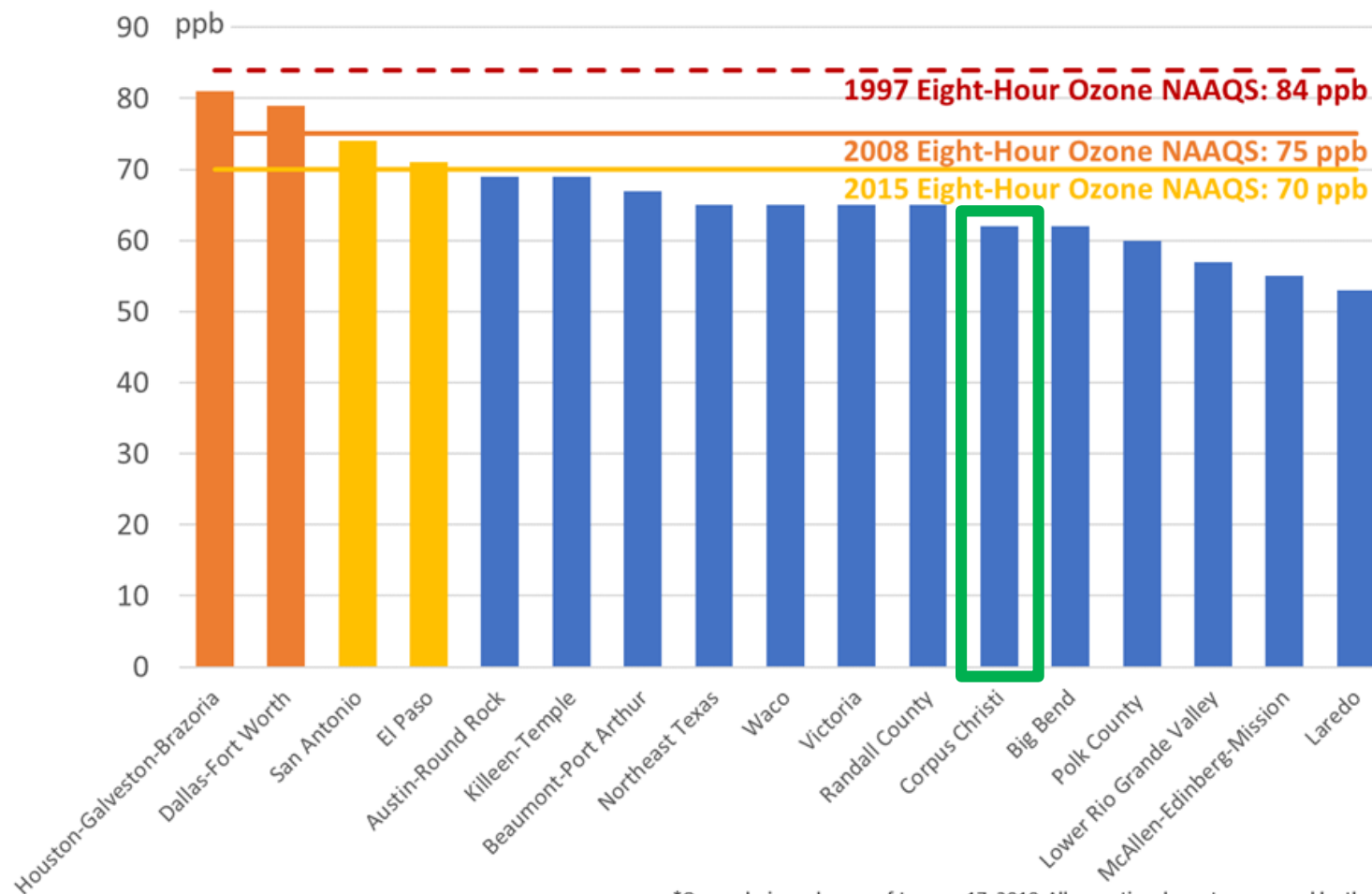


- Monitor for ozone,  $PM_{2.5}$ ,  $PM_{10}$ , VOCs, sulfur compounds, metals in Nueces and San Patricio County area
  - Ozone, PM, and  $SO_2$  are compared to the NAAQS set by EPA
  - Hourly, 24-hour, and annual average VOC and metal concentrations are evaluated using AMCVs
  - $H_2S$  is compared to the state standard

# CURRENT AIR QUALITY: OZONE



2017 Eight-Hour Ozone Design Values by Area in Texas

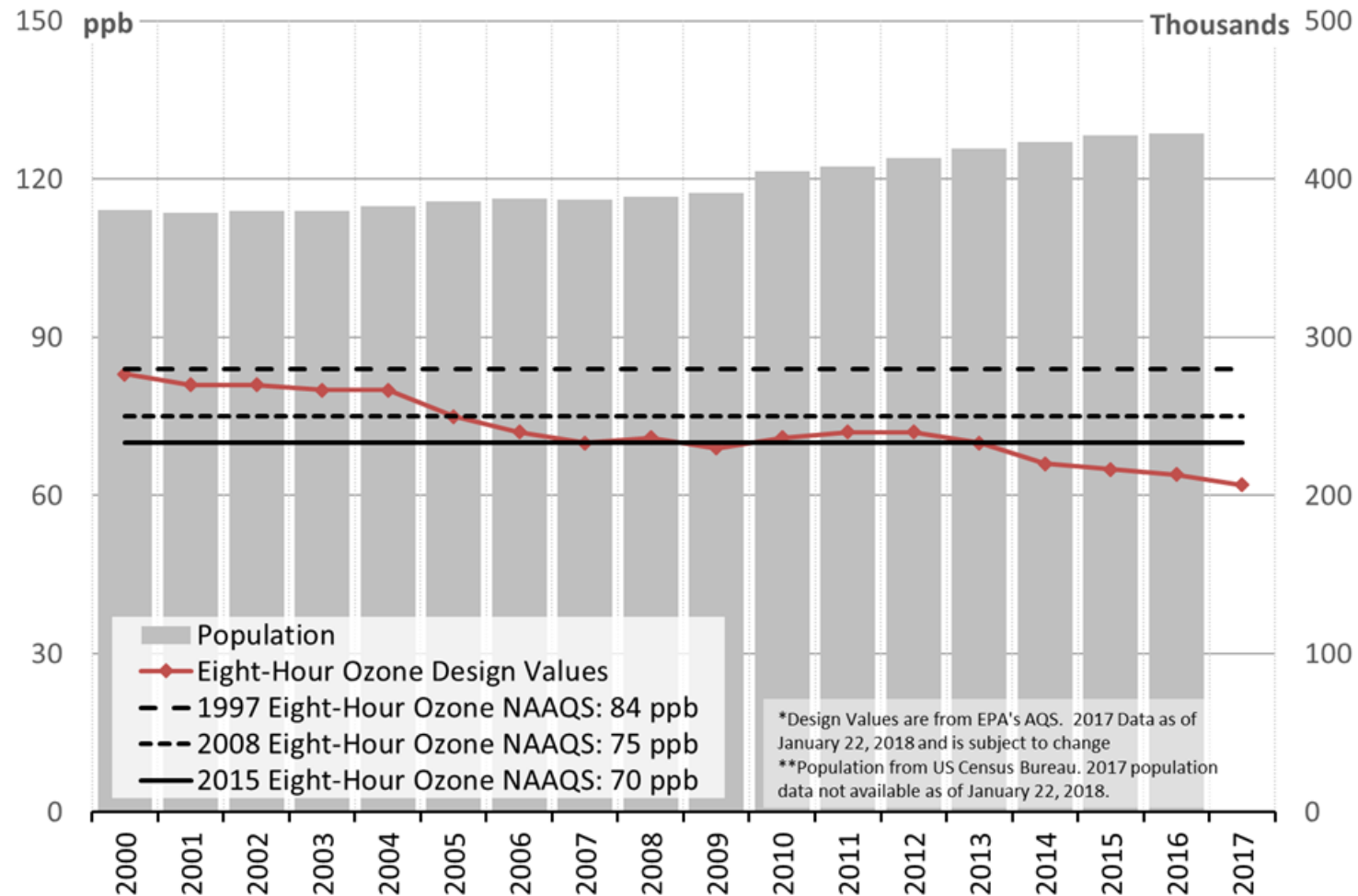


\*Ozone design values as of January 17, 2018. All exceptional events concurred by the EPA have been removed from the design value calculation.

# OZONE TRENDS

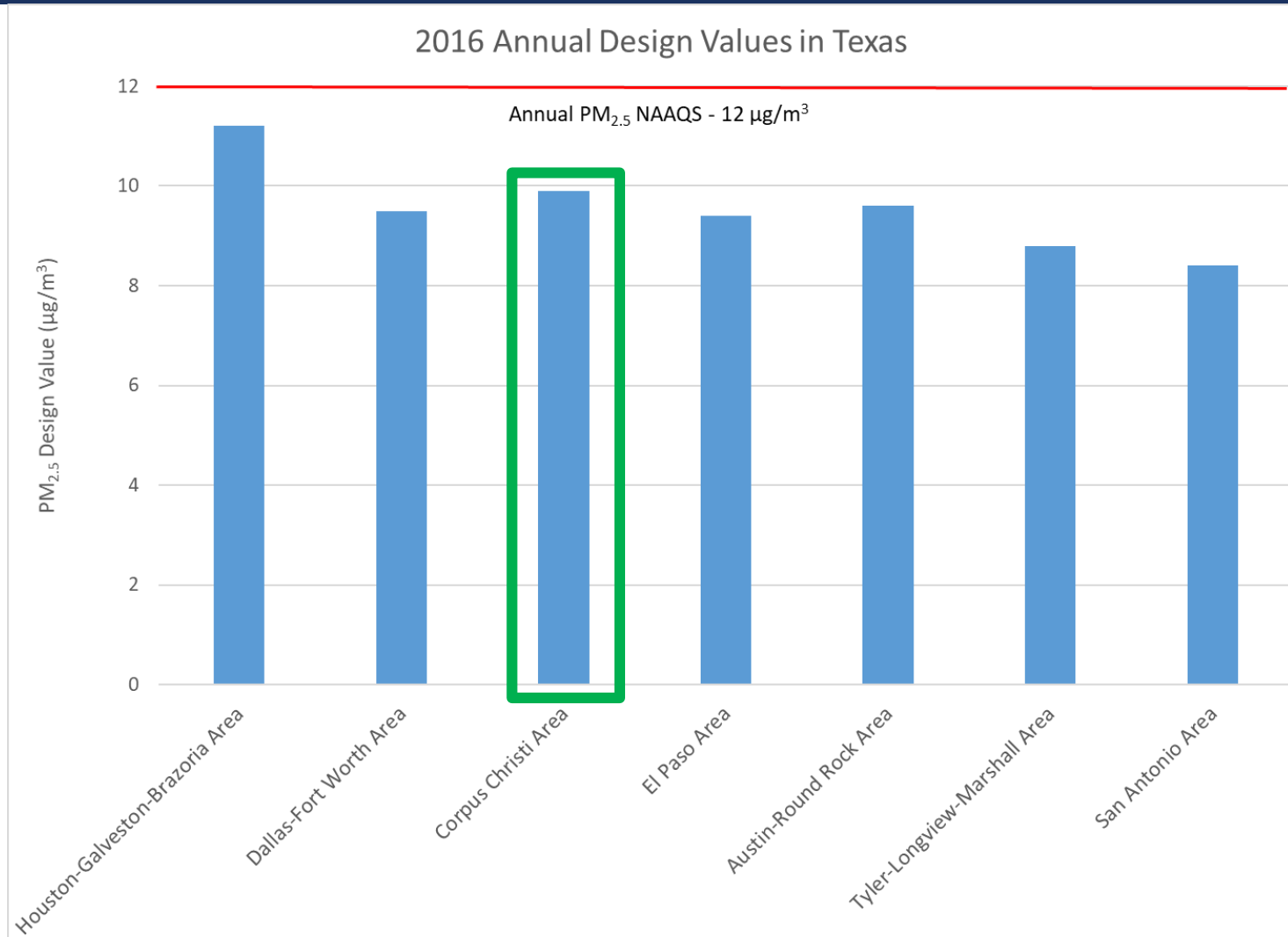


Ozone Design Values and Population in the Corpus Christi Area

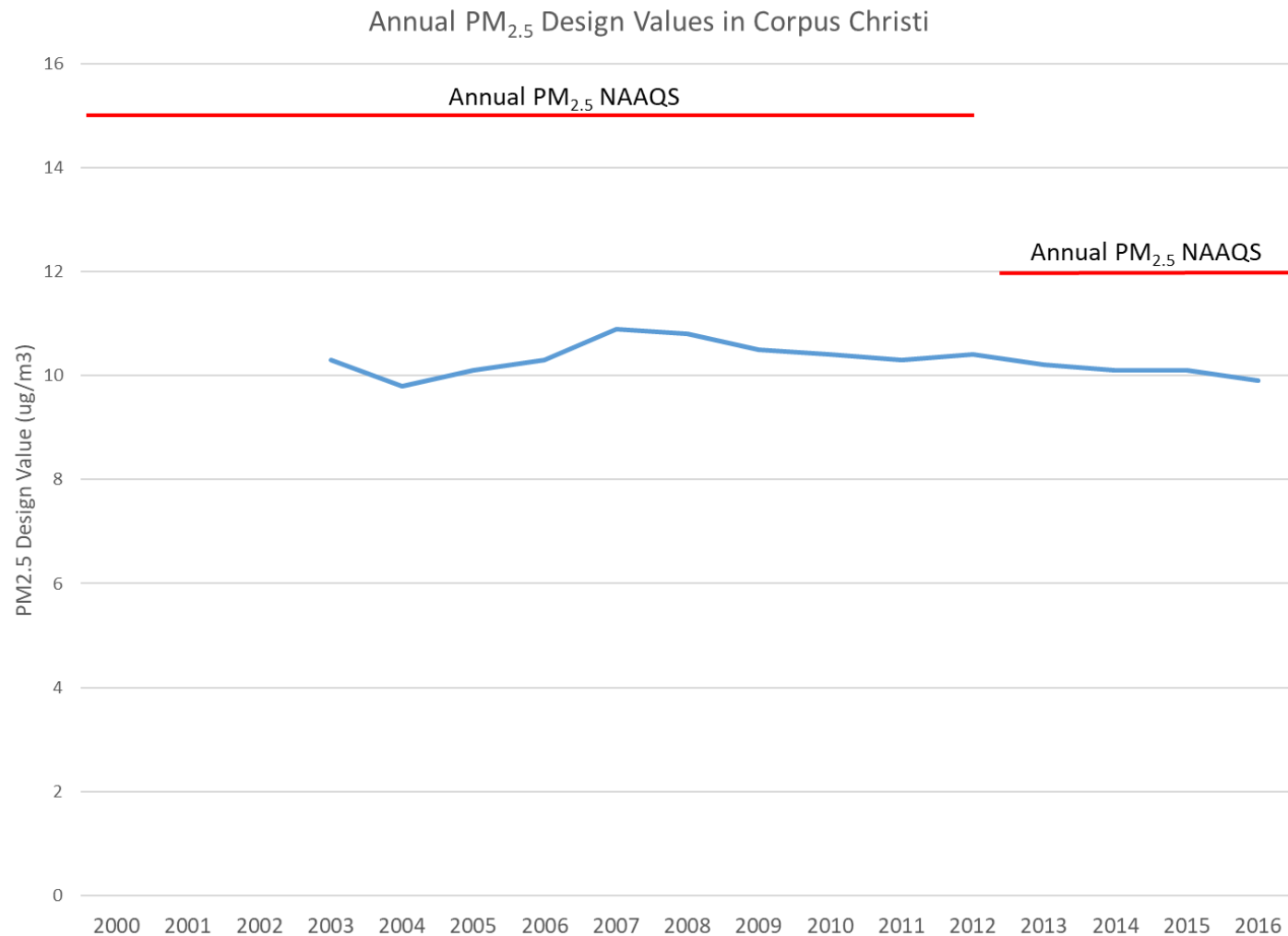




# CURRENT AIR QUALITY: PM<sub>2.5</sub>



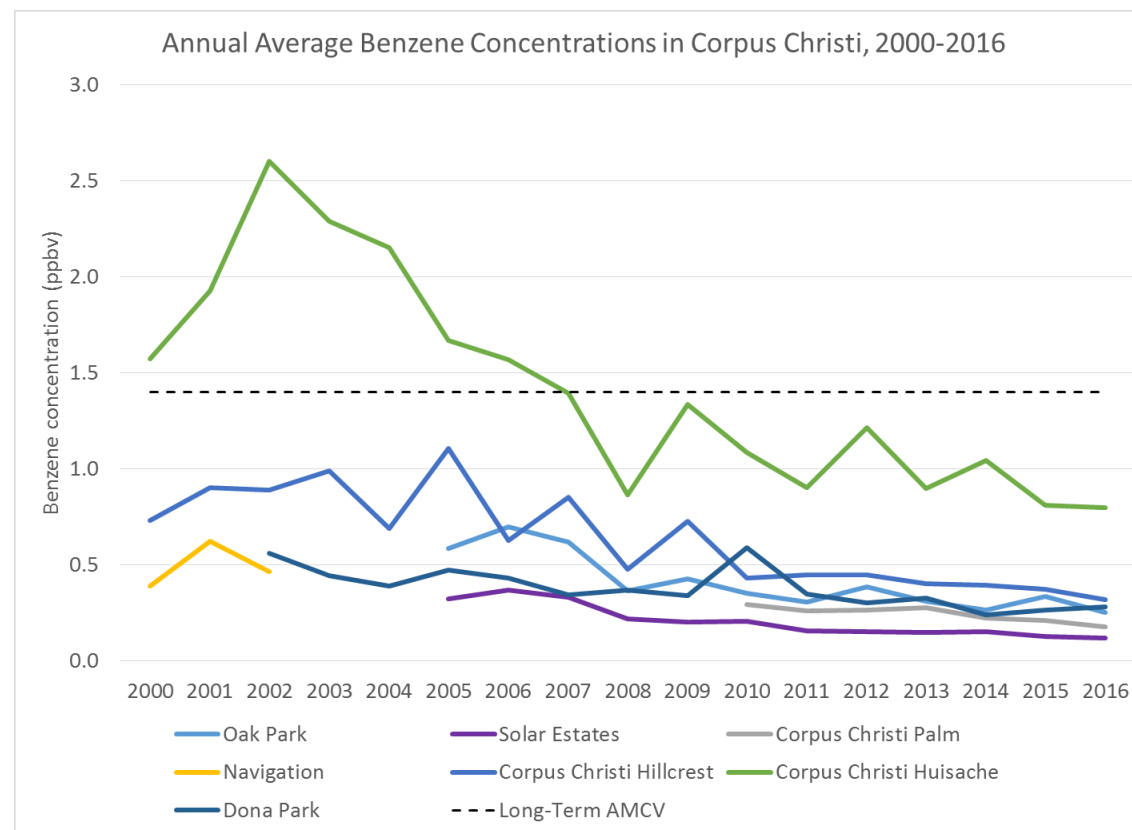
# ANNUAL PM<sub>2.5</sub> TRENDS



# CURRENT AIR QUALITY:VOCS, METALS, SULFUR COMPOUNDS



- Toxicology provides annual assessments of non-criteria pollutant data
- <https://www.tceq.texas.gov/toxicology/regmemo/AirMain.html>
- Pollutant concentrations have remained below AMCVs and the state standard for the last 10 years



# STATIONARY AIR MONITORS



- We do not have stationary air monitors at every facility and we do not monitor for every chemical emitted; however
  - We regulate the facilities with no off-site monitors in the same manner as those with off-site monitors
  - We conduct inspections and reconnaissance investigations
  - We monitor for representative chemicals emitted in high quantities
  - We use EPA's National Scale Air Toxics Assessment (<https://www.epa.gov/national-air-toxics-assessment>)
  - EPA's Risk and Technology Review

# HAND-HELD SAMPLING EQUIPMENT



# INFRARED CAMERA



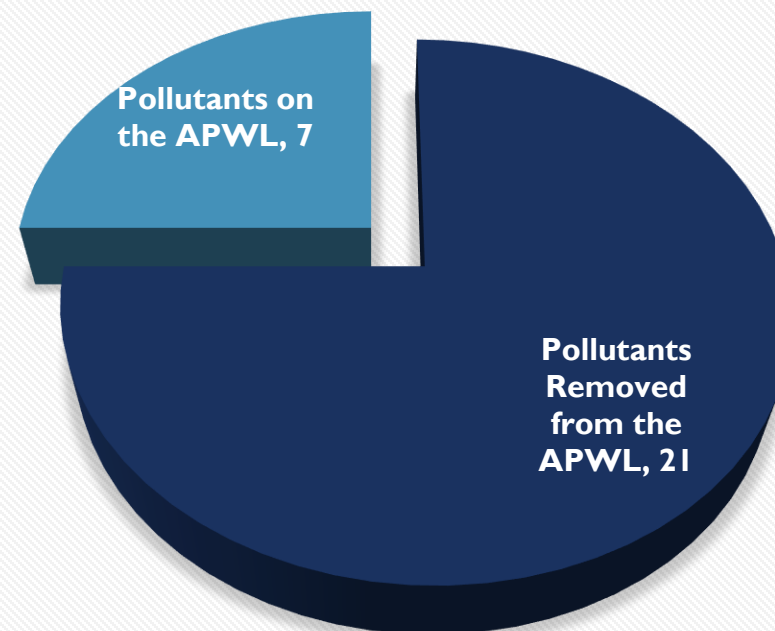
# AIR POLLUTANT WATCH LIST



- List of areas with pollutants at a level of concern

- Purpose

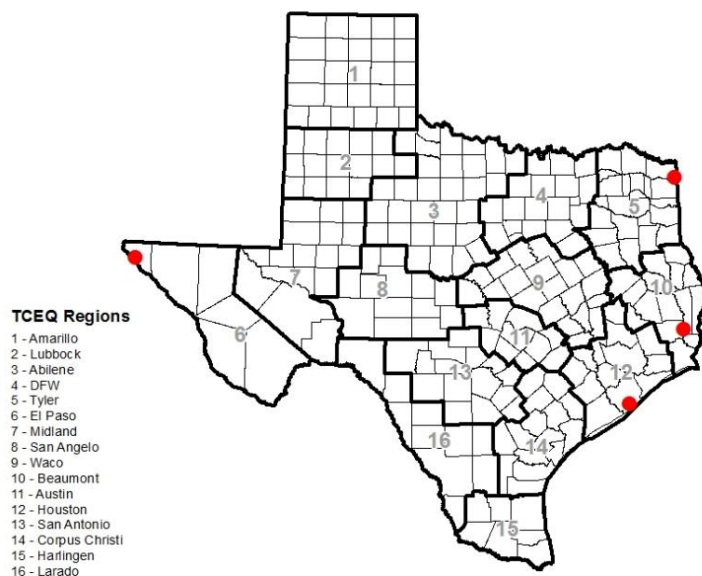
- Heighten internal and external awareness
- Encourage emission reductions
- Focus Agency resources
  - Air Permits
  - Monitoring
  - Field Inspections and Investigations
  - Enforcement
  - Pollution Prevention



# AIR POLLUTANT WATCH LIST



Current (January, 2017) Air Pollutant Watch List (APWL) Areas



APWL Map	County	City	TCEQ Region	Year Added	Pollutant of Interest	Area Boundaries
APWL0501	Bowie and Cass	N/A	5	1999	hydrogen sulfide	North of FM 74/249 E South of Highway 151/245 East of Highway 59 West of TX/LA/AR state line
APWL0601	El Paso	El Paso	6	2004	hydrogen sulfide	North of Highway 375 South of Yarbrough East of IH-10 West of Border Highway / Plant Road
APWL1001	Jasper	Evadale	10	2003	hydrogen sulfide	South of FM-2246 East of FM-105
APWL1201	Brazoria	Freeport	12	2005	arsenic cobalt nickel vanadium	North of Highway 36/Highway 288/Old Quintana Road (extended to Gulf of Mexico) South of Highway 332 of TX Avenue/Highway 1765 East of Brazos River West of the Gulf of Mexico)



# CONCLUSION



- Clean air is a top priority for the TCEQ
- We are constantly working to preserve and improve the air through
  - Air quality research
  - Air quality monitoring
  - Toxicity factor development
  - Pre-construction permitting
  - Consistent investigative presence
  - Public participation

## REGIONAL OFFICE



- Inspections
- Reconnaissance
- Complaint Investigations
  - <https://www.tceq.texas.gov/compliance/complaints/index.html>
  - 1-888-777-3186
  - 24 hours a day/7 days a week

## CONTACT INFORMATION



- Lindsey Jones

- Sr. Toxicologist
- (512) 239-1784
- [Lindsey.Jones@tceq.texas.gov](mailto:Lindsey.Jones@tceq.texas.gov)

- Michael Honeycutt

- Director
- (512) 239-1793
- [Michael.Honeycutt@tceq.texas.gov](mailto:Michael.Honeycutt@tceq.texas.gov)

Toxicology Division Webpage  
[www.tceq.texas.gov/toxicology](http://www.tceq.texas.gov/toxicology)